WHAT IS CLAIMED IS:

1. A method for transmitting a stream of temporally ordered data in a manner which ensures a maximum wait period τ before utilization of the data can commence at a receiving site, comprising the steps of:

dividing the stream of data into a sequence of fragments;

dividing said sequence of fragments into multiple segments; and

repetitively transmitting each segment of fragments in a respective encoded substream of data such that the fragments in the *k*th segment from the beginning of the data stream are transmitted with a maximum repetition period $p(k) = \tau(1+\lambda)^k$, where $0 \leq \lambda \leq 0.5$.

2. The method of claim 1 wherein each of said fragments contains the same amount of data from said stream.

3. The method of claim 1 wherein said substreams are transmitted in a time-division multiplexed manner.

4. The method of claim 1 wherein said substreams are transmitted in parallel.

5. The method of claim 1 wherein $1/\lambda$ is in a range from about 3 to about 25.

6. The method of claim 1 wherein at least one segment contains the maximum integral number of fragments that fit within the repetition period of the segment.

7. The method of claim 6 wherein the fragments in said segment are transmitted in the same sequence during each repetitive transmission of the segment.

8. The method of claim 1 wherein at least one segment contains less than the maximum integral number of fragments that fit within the maximum repetition period of the segment.

9. The method of claim 8 wherein the fragments in said segment are transmitted in a different order during different respective transmissions of the segment.

10. The method of claim 1 further including the step of transmitting at least one additional substream in which every fragment of said data stream is transmitted with the same repetition period.

11. The method of claim 10 further including the step of selectively deleting the fragments in a portion of at least one of said segments in one of said encoded substreams.

12. The method of claim 11 wherein each deleted fragment is selected as one having a corresponding fragment present in an additional substream within a time window that is no greater than the repetition period of its segment from the occurrence of said fragment in each of the preceding and following segments in an encoded substream.

13. The method of claim 12 further including the step of aligning the segment from which fragments are deleted with the additional substream containing the corresponding fragments so that the first fragment to be deleted

from the segment is aligned with any one of the fragments in the additional substream that corresponds to a deleted fragment.

14. The method of claim 13 wherein fragments are deleted from said encoded substreams so that all of said segment substreams have the same periodicity.

15. The method of claim 11, further including the steps of designating a last start time beyond which receipt of the complete data stream cannot be ensured, and transmitting no more than one copy of each fragment among said encoded substreams, beginning at said last start time, for a final transmission of the data stream.

16. The method of claim 15, wherein fragments which are contained in said additional substream after said last start time are omitted from said encoded substreams.

17. The method of claim 16 wherein the fragments that are omitted are those which occur in the additional substream at a time no later than the time they would have occurred in the encoded substream.

18. The method of claim 15 wherein said last start time precedes the end of the sequence of fragments transmitted on said additional substream by $T(\lambda N+1)$, where T is the length of the data stream, $0 \leq \lambda \leq 1$ and N is the number of encoded substreams.

19. The method of claim 1 wherein said temporally ordered data comprises a media presentation, and each fragment contains no more than one second of the presentation.

20. In a media broadcast system in which a media presentation is divided into a sequence of fragments and the fragments are repetitively transmitted with different repetition periods, a method for playing back the presentation within a maximum period of time τ from any arbitrary point in time, comprising the steps of:

detecting an indication to begin playback of the presentation;

loading an index of all fragments in the sequence;

detecting each fragment that is received after said indication;

checking said index upon detection of each received fragment to determine whether a copy of that fragment has been stored;

storing the fragment if the index indicates that the fragment has not been previously stored, and setting the index to indicate that the fragment is being stored; and

providing said stored fragments to a playback device in sequential order after the first fragment in the sequence has been received and stored.

21. The method of claim 20 wherein the step of providing the stored fragments to the playback device does not begin until said maximum period of time has elapsed after detection of said indication.

22. A method for encoding a streaming media presentation for transmission in a manner which ensures a maximum wait period before playback of the presentation, comprising the steps of:

dividing the presentation into a sequence of fragments;

dividing said sequence of fragments into successive segments such that each segment has a maximum length which is a function of the segment's location within the sequence of fragments;

repetitively transmitting each segment of fragments in a respective substream of encoded data;

transmitting at least one additional substream containing copies of fragments in said encoded substreams; and

selectively deleting the fragments in a portion of at least one of said segments in one of said encoded substreams.

23. The method of claim 22 wherein a copy of every fragment in the presentation is transmitted within additional substreams with the same repetition period.

24. The method of claim 22 wherein each deleted fragment is selected as one having a corresponding fragment present in an additional substream within a time window that is no greater than the repetition period of its segment from the occurrence of said fragment in each of the preceding and following segments in an encoded substream.

25. The method of claim 24 further including the step of aligning the segment from which fragments are deleted with the additional substream containing the corresponding fragments so that the first fragment to be deleted from the segment is aligned with any one of the fragments in the additional substream that corresponds to a deleted fragment.

26. The method of claim 25 wherein fragments are deleted from said encoded substreams so that all of said segment substreams have the same periodicity.

27. A method for transmitting a first steam of temporally-ordered data over a broadcast network in a manner which ensures a maximum wait period before utilization of the data, comprising the steps of:

dividing the temporally-ordered data into a sequence of fragments;

repetitively transmitting said fragments at different rates such that fragments near the beginning of the sequence are transmitted more often that fragments which occur later in the sequence;

designating a last start time beyond which receipt of the complete data stream cannot be ensured; and

transmitting no more than one copy of each fragment, beginning at said last start time, for a final transmission of the data stream.

28. The method of claim 27 further including the step of subsequently transmitting fragments of a second stream of temporally-ordered data after said final transmission of the first data stream.

29. The method of claim 28 wherein said sequence of fragments is divided into successive segments that are transmitted in respective substreams of encoded data.

30. The method of claim 29 wherein the transmission of said second stream of data begins at the same time on each of said substreams.

31. The method of claim 29 wherein the transmission of the substreams of encoded data terminate at different times relative to one another, and the transmission of said second stream of data on said substreams begins at different times for the different respective substreams.

32. The method of claim 31 further including the step of transmitting at least one additional substream in which all of the fragments of a data stream are transmitted at the same frequency.

33. The method of claim 32 wherein the step of subsequently transmitting fragments of the second data stream on a given substream is delayed after the termination of the transmission of the prior data stream on said given substream.

34. The method of claim 33 wherein the length of said delay is determined according to the length of the segment of fragments transmitted in said given substream.

35. The method of claim 30 further including the step of transmitting at least one additional substream in which all of the fragments of a data stream are transmitted at the same frequency.

36. The method of claim 35 wherein the transmission of the first data stream over said additional substreams terminates at the same time as said final transmission of the encoded data terminates.

37. The method of claim 36 further including the step of deleting copies of fragments from the substreams of encoded data if copies of said fragments are transmitted in said additional substream subsequent to said last start time.

38. The method of claim 30 further including the step of reordering fragments from said segments among said substreams during said final transmission to provide nominally constant bandwidth requirements during said final transmission.

39. A method for transmitting temporally-ordered stream of data over a broadcast network, comprising the steps of:

dividing the temporally-ordered data into a sequence of data fragments;

dividing said sequence of fragments into successive segments for repetitive transmission, each segment having a length which is a function of the segment's location within the sequence of fragments;

assigning a nominal transmission time to each fragment within a segment;

sorting the fragments in all of said segments in accordance with said nominal transmission times; and

transmitting the fragments in the sorted order at a fixed data rate.

40. The method of claim 39 wherein the nominal transmission time for the fragments of a segment is based on a time interval which is a function of the length of the segment and the number of fragments in the segment.

41. The method of claim 40 wherein said fixed data rate is based on the harmonic mean of the time intervals for all of said segments.

42. The method of claim 39 wherein each segment has a length which is $(1+\lambda)$ greater than the length of the preceding segment, where $0<\lambda\leq 0.5$.

43. A system for retrieving data fragments of a temporally-ordered data stream which are repetitively broadcast in a manner such that fragments occurring at the beginning of the data stream are transmitted more frequently than fragments occurring at the end of the data stream, comprising:

a buffer in which received data fragments are stored;

an assembly circuit for retrieving stored fragments from said buffer and presenting the fragments to a playback device in said temporal order; and

a gate circuit which receives broadcast fragments and selectively forwards the fragments to said buffer or to said assembly circuit in accordance with the temporal location of a received fragment relative to fragments to be presented a playback device.

44. The system of claim 43 wherein said assembly circuit includes a pre-buffer for storing fragments received from said buffer and said gate circuit in temporal order, prior to presentation to a playback device.

45. The system of claim 43 wherein said buffer includes a main buffer having a first input data rate, and a FIFO buffer having a second, faster input data rate for preliminarily storing received fragments prior to storage in said main buffer.

46. The system of claim 43 wherein said gate circuit sets an index to indicate fragments which have been provided to said buffer and said assembly circuit, and selectively discards received fragments which have been previously provided to said buffer and said assembly circuit.

47. A method for delivering a streaming media presentation via a broadcast network, comprising the steps of:

dividing the presentation into a sequence of fragments;

dividing said sequence of fragments into successive segments each having a length which is a function of the segment's location within the sequence of fragments;

repetitively transmitting each segment of fragments in a respective substream of encoded data;

detecting an indication to begin playback of the presentation at a viewing location;

storing a copy of each of the fragments received over said substreams upon detecting said indication; and

providing the stored fragments of a segment to a playback device in sequential order when one copy of every fragment in the segment has been received after said indication.

48. The method of claim 47 wherein a given segment of fragments is transmitted over a period of time equal to the playback time of all previous segments plus a predetermined wait period.

49. The method of claim 48 wherein the fragments of a segment are provided to the playback device as soon as said period of time elapses after said indication.